

I claim:

1. A debris evacuation apparatus for use in a pumping apparatus comprising, in combination:

a first seal positioned circumferentially about said debris evacuation apparatus;

a first groove located south of said first seal;

at least one port extending through said first groove to a passage within an interior of said debris evacuation apparatus;

a main shaft located south of said first groove; and

a screw-in insert located south of said first groove;

wherein said screw-in insert is open at a south end thereof to receive a flow of fluid, and wherein at a north end of said screw-in insert there is located a closed center section surrounded by a plurality of angled veins, so that fluid travelling north within said screw-in insert will be blocked by said center section and forced through said angled veins, with said angled veins imparting rotation to said fluid as it travels northward.

2. The debris evacuation apparatus of Claim 1 further comprising an external threaded section at a north end thereof, north of said first seal.

3. The debris evacuation apparatus of Claim 2 wherein said external threaded section is adapted to be received within a mating section proximate a south end of an open cage.

4. The debris evacuation apparatus of Claim 1, further comprising an inwardly inclined collar area located north of said first seal.

5. The debris evacuation apparatus of Claim 1, wherein said first seal is comprised of urethane.

6. The debris evacuation apparatus of Claim 1, further comprising a second seal positioned circumferentially about said debris evacuation apparatus south of said first groove.

7. The debris evacuation apparatus of Claim 6, wherein said second seal is comprised of urethane.

8. The debris evacuation apparatus of Claim 6, further comprising a second groove located south of said second seal.

9. The debris evacuation apparatus of Claim 8, further comprising at least one port extending through said second groove to said passage.

10. The debris evacuation apparatus of Claim 1, further comprising an expansion chamber located north of said screw-in insert and south of said passage, and wherein said expansion chamber has a diameter that is greater than that within said screw-in insert and greater than that within said passage.

11. The debris evacuation apparatus of Claim 1, wherein said screw-in insert is located within an interior portion of said main shaft.

12. A method for evacuating debris from a pumping apparatus comprising the steps of:
providing a debris evacuation apparatus comprising, in combination:
a first seal positioned circumferentially about said debris evacuation apparatus;
a first groove located south of said first seal;
at least one port extending through said first groove to a passage within an interior
of said debris evacuation apparatus;
a main shaft located south of said first groove;
a screw-in insert located south of said first groove;
wherein said screw-in insert is open at a south end thereof to receive a flow of
fluid, and wherein at a north end of said screw-in insert there is located a closed center section
surrounded by a plurality of angled veins, so that fluid travelling north within said screw-in
insert will be blocked by said center section and forced through said angled veins, with said
angled veins imparting rotation to said fluid as it travels northward;
pumping fluid through said debris evacuation apparatus;
said fluid travelling northward through said screw-in insert and said passage;
drawing debris in through said ports in said first groove;
said fluid and said debris exiting a north end of said debris evacuation apparatus.

13. The method of Claim 12 wherein said debris evacuation apparatus further comprises
an external threaded section at a north end thereof, north of said first seal.

14. The method of Claim 13 further comprising the step of coupling said external
threaded section to a mating section proximate a south end of an open cage.

15. The method of Claim 12, wherein said debris evacuation apparatus further comprises an inwardly inclined collar area located north of said first seal, and further comprising the step of capturing debris in said inwardly inclined collar area.

16. The method of Claim 12, wherein said debris evacuation apparatus further comprises a second seal positioned circumferentially about said method south of said first groove.

17. The method of Claim 16, wherein said debris evacuation apparatus further comprises a second groove located south of said second seal, having at least one port extending therethrough, and further comprising the step of drawing debris in through said ports in said second groove.

18. The method of Claim 12, wherein said debris evacuation apparatus further comprises an expansion chamber located north of said screw-in insert and south of said passage, and wherein said expansion chamber has a diameter that is greater than that within said screw-in insert and greater than that within said passage.

19. The method of Claim 12, wherein said screw-in insert is located within an interior portion of said main shaft.

20. The method of Claim 12, wherein said screw-in insert is located south of said main shaft.